New Approaches in Gas Properties Testing Will Help CBM Development in Russia

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INTERNATIONAL EMERGING MARKETS FOR COALBED METHANE PROJECTS

A U.S. EPA-Sponsored Workshop

Russian Coalbed MetH$_4$ane Center

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Background

- The Russian Coalbed Methane Center was established in 1995 as the result of joint efforts by U.S. EPA and the Institute of Coal and Coal , the Siberian Branch of the Russian Academy of Sciences;
- The goal of the Center is to promote the development of coalbed methane recovery in Russia by providing information and assistance to interested companies and government agencies;
- The Center is located within the Kuzbass, in the city of Kemerovo.

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What Specific Services Does the Russian CBM Center Provide?

- Infotainment:
  - Disseminating information on development and use of coal mine methane;
  - Creating domestic industry networks within Russia for information exchange;
  - Providing information to foreign companies exploring project opportunities in Russia.

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- Seminars and Workshops:
  - Organizing seminars and workshops;
  - Developing and introducing coal mine and gas industry contacts to potential business partners;
  - Making policy recommendations for promoting coal mine methane development; and
  - Organizing technical training activities.

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Barriers to Coalbed Methane Development

- Lack of effective modern drilling equipment for surface and horizontal boreholes;
- Small variety of home-designed CBM utilization technologies;
- Discrepancy in Russian and Western methodology of assessing of gas properties of coal that makes available geological data incomprehensible to abroad developers.

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Equipment for the Testing of Coal Properties

- The CBM Center is setting up a laboratory to test the permeability and desorption properties of Kuzbass coals;
- The laboratory, constructed with support from U.S. EPA, utilize state-of-the-science equipment and is enable the CBM Center to obtain data on coal characteristics that will help provide a clear understanding of the potential for coal mine methane production in the Kuzbass.

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Laboratory Setup Process

- The set of the equipment was chosen on the basis of recommendation of the leading Western gas companies;
- It was recommended to use the field test equipment as an source for the most reliable for the data acquisition.

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Equipment Set

Baker Oil Tools
Injection Packer

Desorption
Test
Canisters

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Data Collection

K8 – the Electronic Memory Probe

Hermit 3000 – the 8-channel electronic data logger

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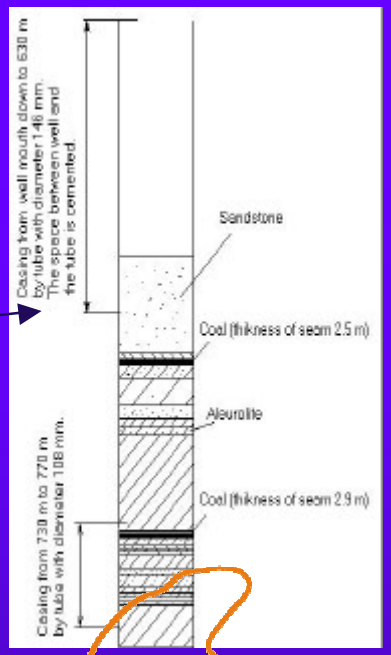
Well Site

Donetsk coal basin
RecoverableCoal Reserves - 108 mmt
Coalbed Methane Reserves- 1.3 10 m
Coalbed methane utilization
Some of the enclosure is used by the boilers

Pechorsky coal basin
RecoverableCoal Reserves - 61 mmt
Coalbed Methane Reserves - 1.9 10 m
Coalbed methane utilization
Boiler stations - 4
Coal dryers unit - 1
Unit for heating of enclosure air - 1



Tunguska coal basin
Recoverable Coal Reserves - 1997 mmt

Yuzno-Yakutsky coal basin
Recoverable Coal Reserves - 393 mmt

Sakhalinsky coal basin
Recoverable Coal Reserves - 13.9 mmt

Primorsky coal basin
Recoverable Coal Reserves - 10.9 mmt

Kuznetsky coal basin
Recoverable - 548 mmt
Coal Reserves - 13.1 10 m
Coalbed methane utilization
Some of the enclosure is used by the boilers

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Field Tests

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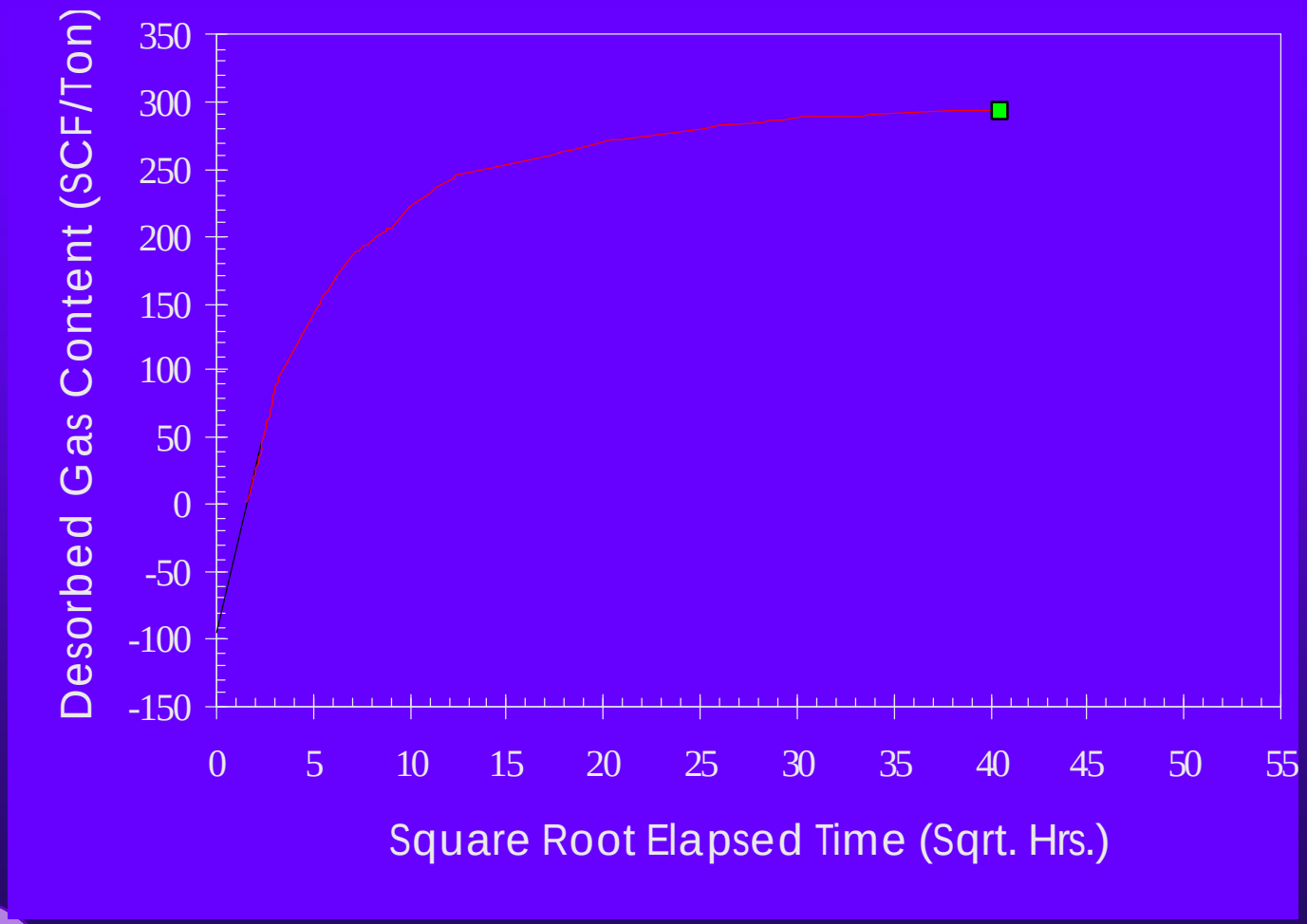
Cumulative Desorption Graph



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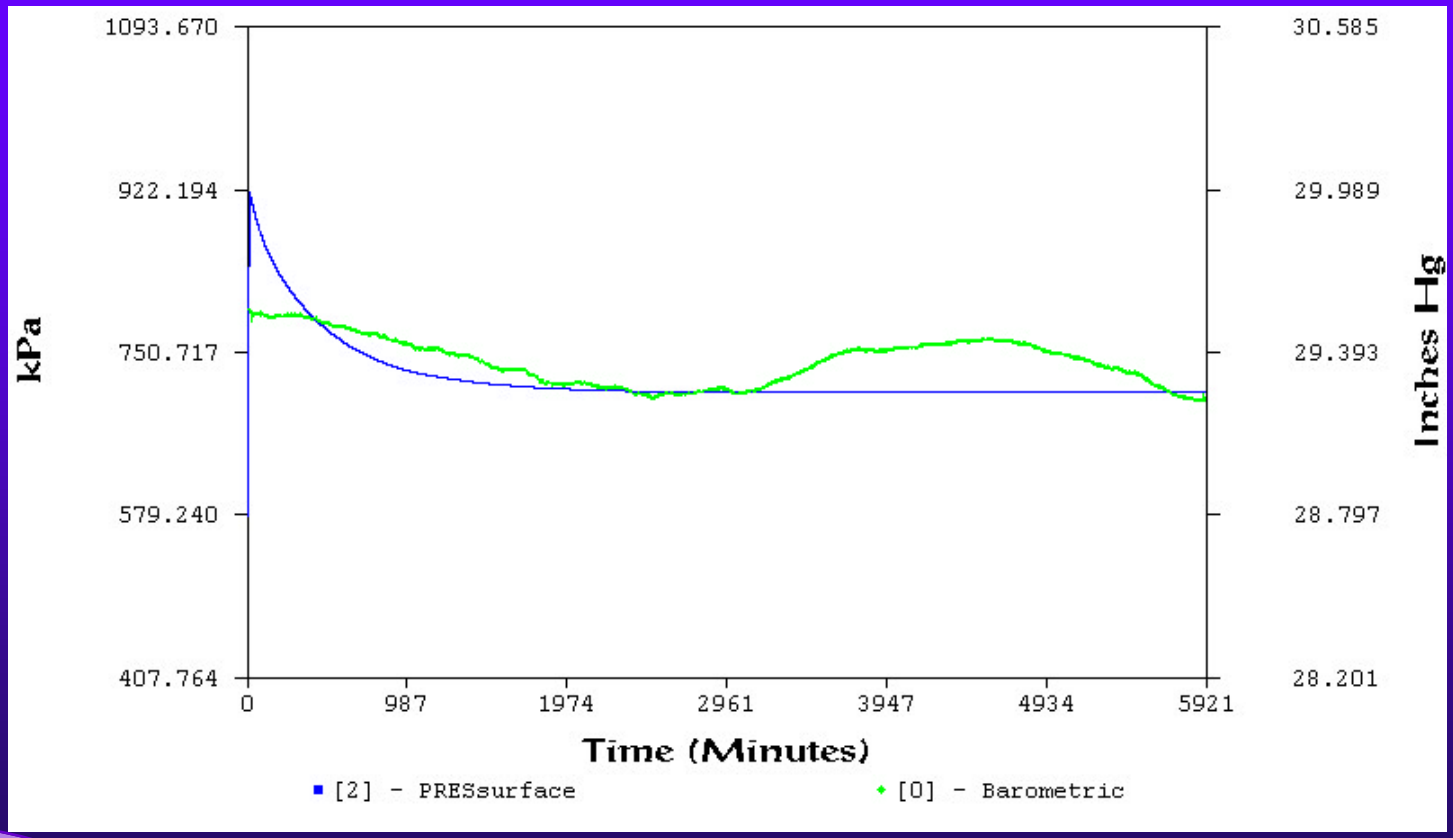
Slug Test Data Analyses



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Injection/Falloff Test Data Analyses

- Fekete WellTest software is used;
- The set of curves includes:
  - Strip chart;
  - Results of derivative analyses;
  - Radial model;
  - Vertical model.

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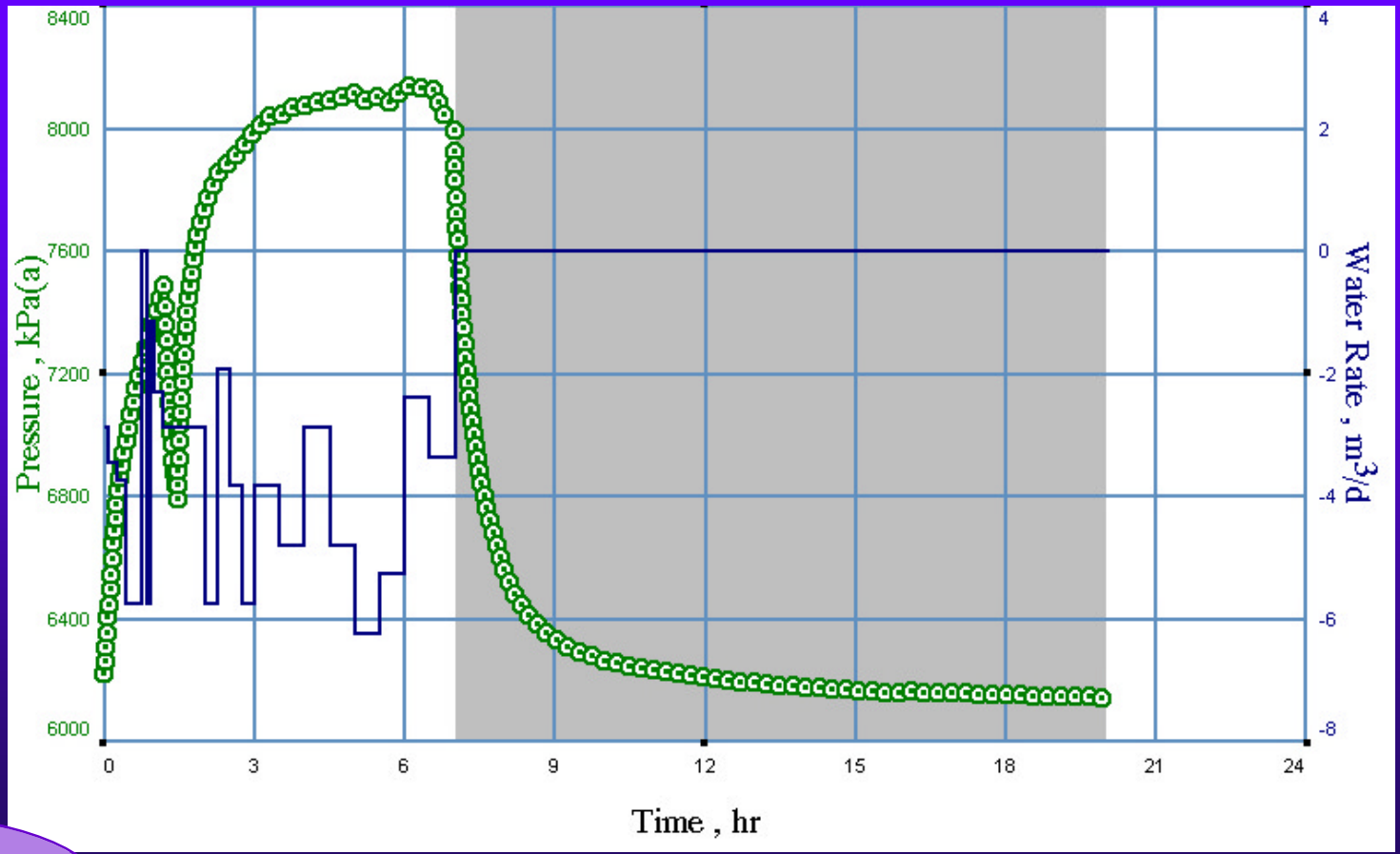
Strip Chart



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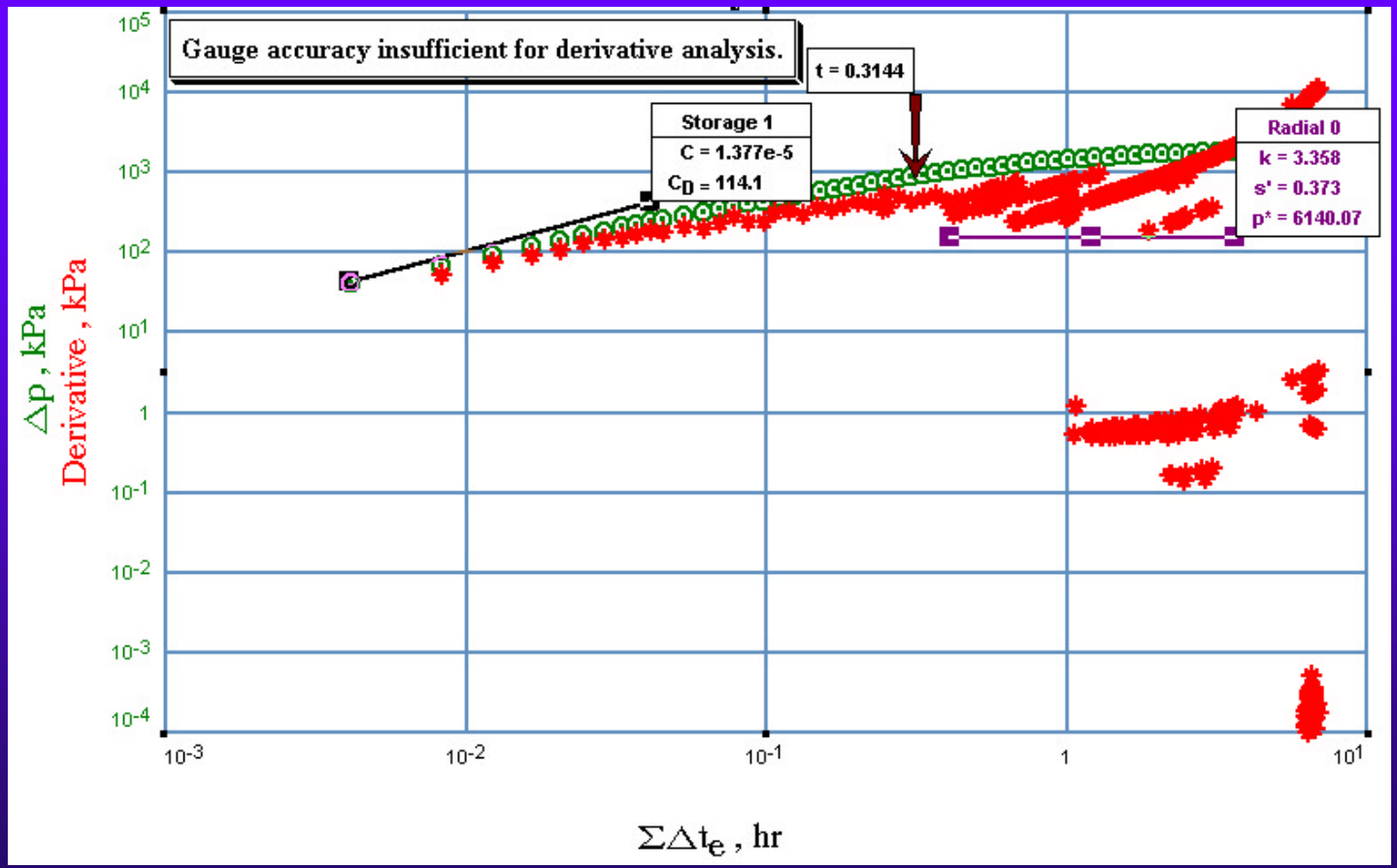
Derivative Analyses-Falloff



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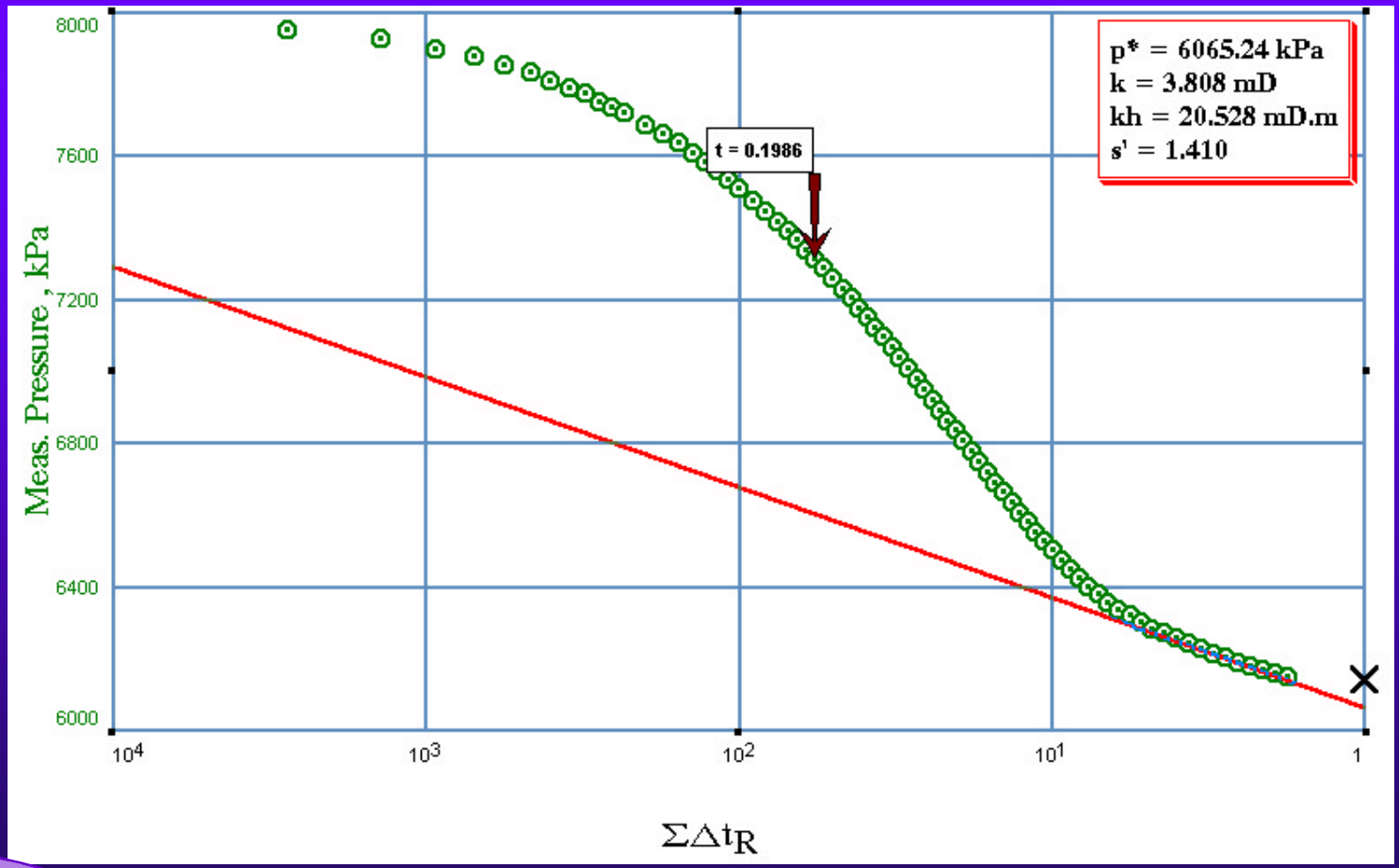
Radial



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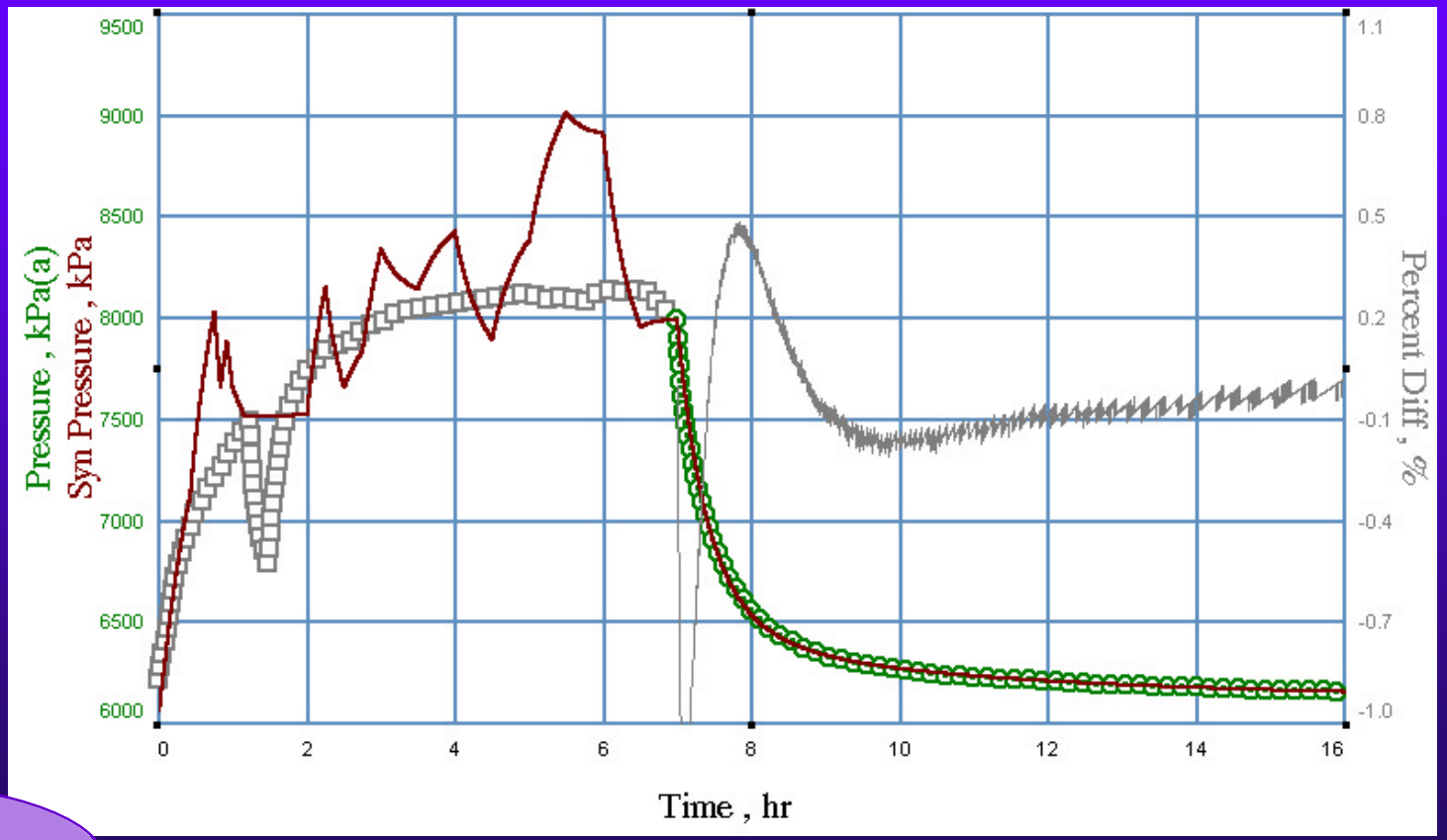
Vertical Model



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The Results of Analyses

Permeability:

2 ÷ 4 md

Skin-Factor:

-0.1÷1.4

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Conclusions

- The Russian CBM Center is equipped by the state of the art laboratory for the coal properties testing;
- Staff of the Center has been trained for the field test;
- The commercial contracts for the conducting tests in Kuznetsk coal Basin is under the discussion with major coal companies;
- The western companies are very welcome to use new Russian CBM service.

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